REMARKS

Applicants request reconsideration of claims 1, 3-4, 8 and 28 in view of the remarks included herein. Claims 1, 3-4, 8 and 28 are pending.

The Rejection under 35 U.S.C. §103(a)

The pending claims stand rejected as being obvious over a combination of Shiratori '825 in view of Ito '404.

Shiratori '825 teaches a magnetooptical recording medium consisting of three magnetic layers laminated between two dielectric layers. The first and third magnetic layers are magnetically coupled. The first magnetic layer is a rare-earth/iron-group amorphous alloy with small vertical magnetic anisotropy and the third magnetic layer is a material with large vertical magnetic anisotropy which can stably hold a magnetized state. The second magnetic layer, in between the first and third magnetic layers, is of a material having a low Curie temperature with respect to the first and third magnetic layers so that when the temperature is raised to near the Curie temperature, the second magnetic layer behaves as a magnetic insulator, i.e., disconnecting the coupling between the first magnetic layer and the third magnetic layer. The Curie temperature is that temperature at which a ferromagnetic material exhibits no magnetism outside an applied magnetic field. A fourth magnetic layer may be provided between the first magnetic layer and a second magnetic layer wherein the fourth magnetic layer has a Curie temperature higher than the second magnetic layer but lower than the first magnetic layer to provide a force sufficient to move a magnetic domain wall within the first magnetic layer. At column 15, lines 11-55, Shiratori '825 discusses the movement of magnetic domains at different temperatures and states that the first magnetic layer has large saturation magnetization at the room temperature so the magnetization of the layer is orientated within the plane of the film by the action of demagnetizing-field energy. As the temperature is raised to near the compensation temperature, the saturation magnetization reaches zero and the demagnetization-field energy decreases. Hence, the magnetization is vertically oriented.

Ito '404 discloses a magnetooptical recording medium comprising a reproduction layer, a recording layer, an intermediate layer, and a connection layer. The connection layer is non-magnetic at room temperature but becomes magnetic when in contact with a magnetic layer. Ito '404 discloses a reproduction layer having a multi-layered structure of about 0.2 nm to about 0.5 nm lamination period, not the recording layer, as required by claim 1 and 28. Ito '404 seeks to realize a reproduction layer that is superior in the change of the anisotropic constant over the course of time which is a different reason to create a magnetooptical structure than provided for in Applicants' claims 1 and 28, i.e., "so that a shortest mark length of the recording layer can be decreased to a desired value," as in claims 1 and 28.

The rejection states that Shiratori '825 teaches a recording layer with a superlattice structure so that a product of a coercive force Hc and saturated magnetization Ms at room temperatures is increased sufficiently so that a shortest mark length of the recording layer can be decreased to a desired value, as required by claims 1 and 8. Applicants disagree. First of all, Shiratori '825 states that the Curie temperature can be controlled independently of the saturation magnetization by using cobalt to replace iron and by controlling the amount of replacement. Thus, the teachings of Shiratori '825 relative to the Curie temperature are independent of a material's saturation magnetization, which is a factor of claims 1 and 28.

Second, Shiratori '825 talks about domain-wall movement as being dependent upon temperature, and discloses that when the first magnetic layer having a large saturation magnetization is raised to near the compensation temperature, the saturation magnetization reaches zero. Shiratori '825 discusses a force to move a domain-wall energy but provides no relationship between the force to move a domain-wall and the coercive force, another factor claimed by Applicants; and the rejection fails to establish the relationship. At column 15, lines 11-15, Shiratori '825 merely explains the movement of magnetic domains from being in-plane of the first magnetic layer to being vertically magnetized when the temperature is raised. Neither Shiratori '825, Ito '404, alone or in combination, establish a necessary relationship between the compensation temperature

and/or the Curie temperature and the coercive force, which relationship is necessary to establish a prima facie case of obviousness.

Applicants have maintained throughout prosecution of this application that Shiratori '825 does not teach a laminated superlattice structure, as required in claims 1 and 8. Shiratori '825 refers to **sublattice** magnetization, not a superlattice, i.e., a material with periodically alternating layers of several substances that possesses periodicity both on the scale of each layer's crystal lattice and on the scale of the alternating layers. The periodicity provided by Ito '404, moreover, refers to a reproduction layer, not a recording layer, as claimed.

Applicants, on the other hand, claim a recording medium wherein the product of the coercive force and the saturated magnetization at room temperatures is within certain limits. The coercive force of a ferromagnetic material is the intensity of the applied magnetic field required to reduce the magnetization of that material to zero after the magnetization of the sample has been driven to saturation. When the coercive field of a ferromagnet is large, the material is said to be a hard or permanent magnet.

In summary, the rejection states that it would have been obvious to a person having ordinary skill in the art to provide a magnetic medium that flowed from the claimed product relationship of the coercive force and the saturated magnetization so that the operation of the medium in stabilized. Applicants disagree. The coercive force of a material may be independent of its saturated magnetization which in turn may be independent of its Curie temperature. Such a product relationship of the reciprocal of the product of the coercive force and the saturated magnetization is not intuitive nor obvious, and is not a natural consequence of the combination of Shiratori '825 with a superlattice reproduction layer of Ito' 404. To obtain a shortest mark length of the recording layer, as in claim 1 and claim 28, moreover, is not necessarily the same purpose or reason as to provide a stabilized medium, Shiratori ''825, column 15, lines 54-55, or a medium that exhibits no aging with the lapse of time, Ito'404 at column 9, lines 26-28. Shiratori '825 does not provide a recording layer having a superlattice and a reciprocal relationship between the coercive force and the saturation magnetization, as required; Ito '404 provides only a superlattice structure in the reproduction layer, not the recording layer.

Applicants request the Examiner to reconsider the rejection and to allow claims 1, 3, 4, 8 and 28. Should the Examiner have any questions or if any issues remain that could be resolved by a telephone call, the Examiner is invited to telephone Mr. Douglas P. Mueller at 612.455.3804.

Respectfully submitted,

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